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ALBERTA NEWSLETTER

INDUSTRIAL DEVELOPMENT BOARD OF THE PROVINCE OF ALBERTA
DEPARTMENT OF ECONOMIC AFFAIRS, EDMONTON, ALBERTA CANADA

HON. A. J. HOOKE, Minister
RALPH R. MOORE, Deputy Minister
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Alberta Offers Prosperous, Expanding Market for Business

A stable and prosperous consumer market and an expanding industrial market is offered the businessman or industrialist considering investment in Alberta.

Alberta's two largest cities are Edmonton and Calgary. Edmonton's metropolitan population increased from 97,842 in 1941 to 173,075 in 1951 Calgary's population increased from 93,021 to 139,105 in the same ten-year period.

Alberta's population, which was 939,501 in the 1951 census, was 796,169 in 1941; 731,605 in 1931; and 588,454 in 1921. Alberta's growth of population has been steady. Mainly a land of young people, it will provide the basis for further growth.

Alberta's people are moving to the cities and the resultant demand for increased services has meant a high level of economic activity. Since 1901, the movement from rural to urban centres has been going on until now the rural population is only 48.04 percent of the whole. In 1901, it was 74.62 percent.

This movement to the cities has been a healthy one as far as business is concerned. Alberta farmers have had a larger market for the produce of their farms while urban business and industry has benefited. Less people on the farms has meant an increased use of labor-saving machinery to meet the increased demands for food while the construction industry has attained high levels of activity meeting the demands of new city dwellers for homes and businesses. During the first six months of 1952, a total of 5,585 building permits for $37,907,716 worth of construction, was issued in four representative Alberta cities. This is a 13 percent increase over the same period of last year. Construction contracts awarded in Alberta during this period totalled 2,822 for a total value of $145,225,300.

Trade and industry statistics show similar increases, further indication of the purchasing power of the Alberta people. Gross sales in wholesale business during 1951 amounted to $476,448,679 while during the first six months of this year gross sales amounted to $244,348,407, a five percent increase from the first six months of last year.

Retail gross sales amounted to $831,317,000 in 1951 and $422,908,000 during the first six months of 1952, a nine percent increase from last year's period. The machine companies, whose gross sales amounted to $174,402,326 in 1951, have also shown a 28 percent increase in sales for the first six months of this year. Only the sales of new motor vehicles are showing a decline this year.

Bank clearings for the first six months of 1952 amounted to $1,664,470,758, a 20 percent increase over that period of 1951 while electric power consumption has increased 14 percent so far this year.

During 1951, the business of all stores except those selling radios and electrical appliances, jewelry or coal and wood increased, with motor vehicle dealers showing the biggest increase in business. Family clothing stores, grocery stores and butcher shops all showed large increases in business.

Tourist trade also is booming in Alberta. During the first seven months of 1952, a total of 604,779 persons visited the National Parks in the Province, a 19 percent increase from the first seven months of last year.

The purpose of the ALBERTA NEWSLETTER is to provide up-to-date information about development and opportunities in Alberta.

In this issue—

Markets in Alberta.
Canada Cement Plant.
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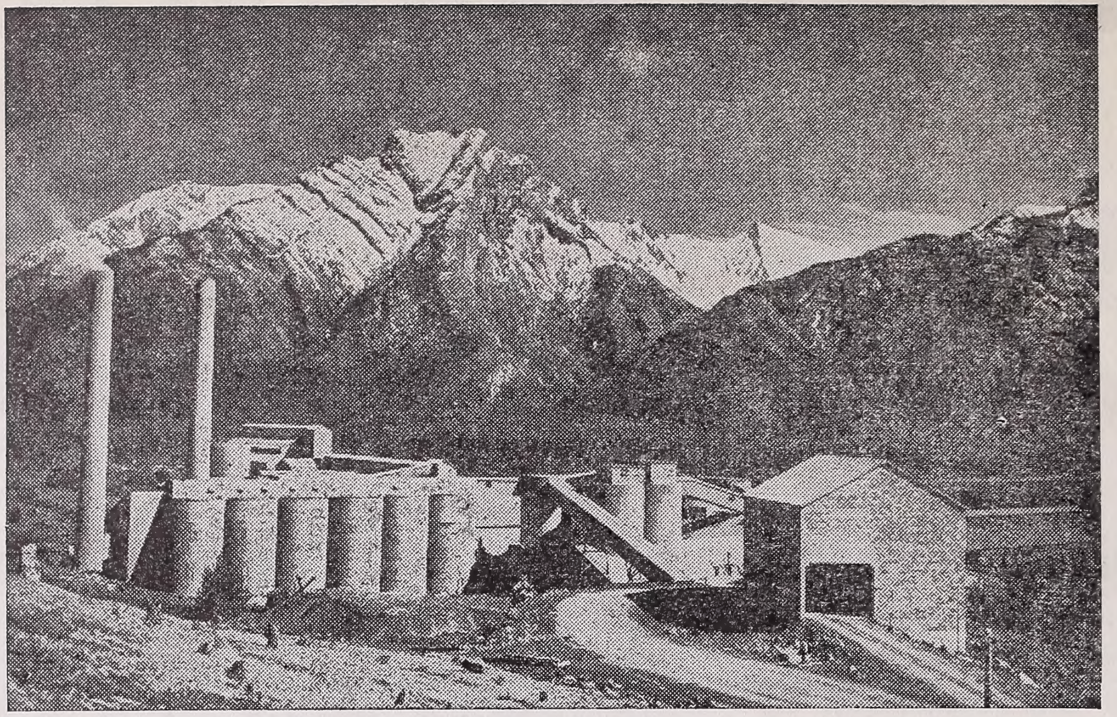
Survey of Lethbridge.

INDUSTRIAL INQUIRY

A British company manufacturing pneumatic concretors is interested in obtaining an Alberta agent for their product.

The pneumatic concretor can be used as a sandblasting machine and for the application of refractory materials in lining and maintaining fire boxes, furnaces, cupolas, ladles and kilns. The unit can also be used for applying concrete preservative coating on timber structures to resist the effects of fire and climatic conditions.

The units have found a ready sale in the United States and the manufacturer would like the product introduced to the Canadian market. Literature is available. Address inquiries to the Director of Industrial Development, Legislative Buildings, Edmonton.



Mountains provide a background to the Canada Cement Company plant at Exshaw.

ALBERTA INDUSTRIES

The Canada Cement Plant

With a tremendous upswing in industrial development and increased housing in the Province, Albertans are now buying close to 4,000,000 sacks or 1,000,000 barrels of cement every year.

Further emphasis on the Province's development is provided by the $7,000,000 expansion to the Canada Cement Company's plant at Exshaw, 57 miles west of Calgary. The extension provides a production boost of 1,200,000 barrels of cement per year over the previous record level of 1,600,000 barrels yearly at this plant. The extension, which began in 1950, was made in an effort to meet all foreseeable demands for cement in Western Canada.

Canada Cement Company Limited is the largest of Canada's cement producers faced with the problem of supplying the needs of the largest number of cement consumers in Canada's history. They ship cement to British Columbia and western Saskatchewan, as well as meeting the demand of Alberta consumers.

Portland cement, so named because its inventor thought it looked like a natural stone quarried on the Isle of Portland ,is the basic material in the manufacture of concrete, the strongest building material now in use. The mixture of Portland cement, sand, stone and water, unlike steel, stone or wood, increases its strength with age. Concrete is economical and easily molded into dams, pools, bridges, buildings and monuments. It is fire-proof, water-proof and termite-proof.

The manufacture of cement at Exshaw begins in the limestone mountain where, several times a year, tremendous charges of dynamite blast tons of rock from the mountain. The limestone is crushed by a huge crushing machine and hammer mills and then stored.

In the cement-making process, the limestone is mixed with shale and water in the tube mill, forming a slurry which contains about 35 percent moisture and the rest clay and rock particles. Most of the clay and rock particles pass through a screen which has 200 meshes per inch.

After passing through correcting tanks, the slurry arrives in the rotary kiln. Here, the water is driven to one section heated to 800 degrees and farther on in the calcinating zone, the carbon dioxide is driven off.

When the remaining materials reach the burning zone they fuse and gypsum is added. The final product is ground and pulverized to form a grayish-white powder known as Portland cement. This Portland cement is manufactured in three different types, standard, high early strength and sulphate- or alkali-resistant cements. The alkali-resistant cement was developed by a Canada Cement Company chemist, from the use of a shale of higher silicon and iron content and lower alumina content. This cement is of prime importance in the southern parts of Alberta. High early strength cement has been developed for the construction industry.

Canada Cement Company Limited, which has plants across Canada, first appeared on the Calgary scene in 1909 when it purchased the Calgary plant of the Alberta Portland Cement Company. In 1910 it bought the Exshaw plant of Western Canada Coal and Cement Company and in 1913 enlarged it. In 1914, the Calgary plant was dismantled and its machinery moved to other plants of the company.

Production at the Exshaw plant began with approximately 4,500 bags a day and increased in later years by the employment of larger kilns to 12,000 bags a day. In 1947, the installation of a 300-foot long kiln brought production to 20,000 bags a day.

RESOURCES OF ALBERTA . . .

BITUMINOUS SANDS

One of the world's richest deposits of petroleum is the bituminous sands of Alberta, located along the Athabasca River north of Fort McMurray. Estimates of the volume of oil which could be extracted from the area range from 100 billion barrels to 300 billion barrels, with a single square mile in some cases capable of producing 100 million barrels of heavy viscous oil.

S. M. Blair, who made a thorough report to the Alberta government on the area and the economic possibilities of extraction, stated that the bituminous sands covered an area of up to 30,000 square miles. This ranges from Fort McMurray, 70 miles north along the river past McKay and Bitumount, and east and west into the muskeg wilderness. In places the deposits are from 150 to 175 feet thick and prominent outcroppings are seen along the banks of the river.

The first white man to see the oil sands was Peter Pond, a free trader who passed the area in 1788 and found the Indians using the tar-like material for medicines and repairing damaged canoes. Later, Sir Alexander Mackenzie mentioned the "bituminous fountains into which a pole of 25 feet long may be inserted without the least resistance."

Many other early travellers and explorers mentioned the oil sands as the Athabasca River became the great route for the fur traders and by the 1880's a geological survey of the area had been completed.

The Alberta Research Council began its study in 1920 when Dr. Karl A. Clark was engaged to find a method of separating the oil from the sand. A pioneer separation plant was erected for this purpose in 1930 . Five years later the Abasand plant was constructed near Fort McMurray.

The proving of bituminous sand strata back from the valley of the Athabasca River can be done only by drilling. In the spring of 1943 the federal Department of Mines and Resources started a drilling program which was continued until January, 1947.

A total of 291 holes were drilled, representing a total footage of 53,918 feet. Holes averaged 185 feet in depth with the deepest hole drilled to over 300 feet.

The origin of the bituminous sands is uncertain, although it has been suggested that the sands originated from the igneous rock formation to the east. Among the theories of the origin of the bitumen is that it came from the cretaceous formation or that it is from oil migrated into the formation from the underlying Devonian formation.

The bitumen varies in quality in the different areas along the river. The mineral aggregate is mainly quartz particles, with smaller amounts of mica, rutile, ilemite, tourmaline, zircon, pyrite and garnet also found. In other cases clay interbedded with the sands is found, while such metals as iron, lead, nickel, copper, zinc, tin and aluminum also occur.

The high content of sulphur in the sands has been studied with a view to extracting this mineral as a by-product. The amount of sulphur in the bitumen varies, but generally is considered to be between 4.5 and 5.5 percent of the weight of dry bitumen.

Generally, the sands are composed of unconsolidated sand, silt and clay impregnated with a viscous asphaltic oil, with clay and sand cemented by pyrite into hard heavy stones or nodules in some localities. In other areas are thin friable sandstone partings with a carbonate cementing while a persistent layer of hard sandstone with a siliceous cementing agent near the top of the formation varies from a few inches to several feet in thickness.

The bitumen has a specific gravity at 25°/25°C of from 1.002 to 1.027. At ordinary temperature the lighter oils pour readily while the heavier types are practically incapable of pouring. The content of 100 penetration asphalt is roughly from 65 to 80 percent. The lighter hydrocarbons present, correspond in volatility to the heavy end of gasoline.

The light crude oils do not likely contain more than one or two percent of such hydrocarbons and the heavy types practically none. Bituminous sand in its natural state of packing weighs about 125 pounds per foot.

The crude oil is susceptible to thermal decomposition with cracking being appreciable at 650 degrees Farenheit. The products of simple refining of crude are a few percent of a high sulphur gasoline, together with diesel oil, fuel oil, and asphalt residuum.

The pilot plant built by the Alberta Government in 1948 has been the scene of experiments for the extraction of oil from the bituminous sands. Most of these experiments were conducted at the Bitumount plant in 1949 when a process was used for separating oil on a commercial basis by the hot water method.

The recent expansion and addition of a 430-foot long kiln promises a daily output of more than 30,000 sacks.

The initial steps in the development of the Canada Cement Company's plant at Exshaw began in 1950 and work was progressed in an effort to meet the necessary output for the 1952 construction program. Besides the new and larger kiln, machinery replacements were also included. Three modern four-tube packers, dust collectors and conveying accessories were installed and a new truck garage, built of concrete ,was completed. This is used for storage and repair work.

Also included in the extension were employee facilities, such as a dining room, recreation centre and a doctor's office.

In this process, the oil sand first is mixed and heated with water until the pulp has a 12 to 15 percent water content. Then it is flooded with hot water, which causes the oil to separate from the sand and float to the surface in a buoyant froth. The sand sinks and fine mineral matter becomes suspended in the water. The oil froth is skimmed from the surface while the sand is removed and the mineral matter settles to the bottom.

Although this method of separation has been proven successful, investigation is still underway for a more economical method.

The crude oil recovered from the oil sands by the hot water method contains about 30 percent water and four to five percent mineral matter while the oil itself is of a very heavy type. This crude product must be coked to yield a coker distillate. There are several methods of coking, including the old shell still method and the conventional delayed coking method.

Both of these methods necessitate the dehydration of the wet crude oil prior to coking. This, as well as the coking operation itself in the case of the conventional method, involves pumping the crude with its high mineral content through tube stills.

Coking by use of fluidized solids technique offers a means of avoiding difficulties in preliminary dehydration and of handling mineral matter through still tubes. Wet crude with its mineral content can be fed directly into a continuous fluidized solids retort.

Coking of the crude bituminous sand yields a coker distillate. This is a product that is becoming of increased commercial value. It has about a four percent sulphur content, which experiments will attempt to reduce before the product will be of commercial value.

Following the tabling of the "Report on Alberta Bituminous Sands" by S. M. Blair in 1951, in which it was stated that the deposits could be feasibly and economically exploited, several companies showed an interest in developing the area.

In his report, Mr. Blair made recommendations that more study be made of the minerals in the bituminous sands, as well as their form, distribution and relation to hydrocarbons. He also urged more exploration to obtain proof of the deposits, stating that mining represents a quarter of the oil production costs.

Mr. Blair estimated that oil from the area would have a value of at least $3.50 per barrel at the Great Lakes terminal of the Canadian pipeline, while the total direct operating cost would amount to $3.10 a barrel. This survey was based on an output of 20,000 barrels per day, with larger production being more economical.

It has been estimated that nine percent of the total cost of extracting the oil would be in transporting it to Edmonton. From here the Interprovincial Pipeline could carry the oil to eastern Canada.

This cost of transportation would depend solely upon the volume of oil sent to Edmonton—the larger the quantity the less the cost per barrel. A pipeline, similar to the one constructed for the Canol project could be feasibly operated both winter and summer. The Canol line, which consisted of 1,700 miles of pipeline laid above ground, was operated in the coldest temperatures, with 19 degrees below Farenheit being the lowest temperature recorded in a pumping station.

Also in the Blair report were the suggestions that mining investigations should be made to determine the cheapest means of securing an adequate yardage for loading with large scale equipment; to attack the deposit from below by use of a block caving or similar method; and the possibilities of recovering the bitumen directly from the ground without any major excavation work.

In 1952, following a symposium held by the Alberta government at which experts from major companies throughout North America presented facts on the oil sands, several private companies applied for permits to carry out investigations and experiments in the area. A total of 450,000 acres of land was leased by the government to the following companies: Swedish Shale Oil Company, Calvan Consolidated Oil and Gas Corporation, Asher Oil Company, Pacific Petroleums, New Continental Oil of Canada, Charter Oil Company, Socony Vacuum Oil Company, Sun Oil Company, Edmond Gilbert of Sun Oil Company, Rio Tinto (Alberta) Oils Ltd., and Lloyd R. Champion.

The Swedish company has leased the provincial government's pilot plant at Bitumount to carry out experiments on a new method of extracting the oil from the bituminous sands. This method, the exact details of which have not been revealed, will attempt to remove the oil in situ so that the sands will not have to be excavated. The actual extraction will be by a heating process said to be in use in Sweden.

Among the regulations which this and other companies will have to follow include: payment of a $25 fee and a deposit of $1,000 before exploration work may be undertaken and an agreement to keep the Alberta government advised on progress. Permits may be granted for an area up to 50,000 acres for a fee of $250 and a $50,000 deposit. Rental for the first year is five cents an acre, second year 10 cents an acre, and third year 25 cents an acre.

After exploratory work has been completed, a company may lease acreage sufficient to keep a plant operating for 20 years. The rental is $1 per acre and a production royalty of up to 10 percent is levied for the first 20-year term.

LETHBRIDGE

LOCATION: On the east bank of the Oldman River, at the junction of the Lethbridge-Crowsnest-Nelson-Vancouver line and the Lethbridge-Cardston-Coutts-Great Falls line of Canadian Pacific Railways.

ALTITUDE: 2,992.8 feet.

TEMPERATURE: Mean summer, 58 degrees; mean winter 29 degrees; mean yearly temperature, 41 degrees.

RAINFALL: Average annual rainfall, 9.96 inches; average snowfall, 40.5 inches; average total precipitation, 15.01 inches.

GEOLOGY: Lethbridge is located at the contact of two types of bedrock. The bedrock to the west of the city is the Bearspaw formation, composed of marine shales, while to the east is the Belly River formation. It consists of shales, sandy shales and sandstone of fresh and brackish water origin. Lethbridge coal is mined from the Belly River series which is also a horizon in which the fossilized bones of vertibrates of Cretaceous age are found.

SOIL: Lethbridge is near the centre line on a strip of dark-brown soil, that averages about 40 miles in width, and extends in an arc, from the United States border to a point just south of Lloydminster on the Saskatchewan border. Adjoining this zone on the east is the brown and on the west the shallow black zone. The dark-brown zone averages about seven inches in depth. Below this is a more compact horizon which is brownish in color, and the lime layer is usually found at depths of 20 to 24 inches below the surface.

Moisture is the principal limiting factor in crop production. Soils in this zone are relatively low in nitrogen and organic matter, but are higher in these constituents than soils of the brown zone. Vegetation in this area is chiefly short grass, which makes a denser cover and taller growth than in the brown zone.

Although the grassland in this area is good for pasture, very little of the soil is arable. Wheat is the primary crop and Lethbridge wheat is known for its high quality. Sugar beets and corn are becoming increasingly important as crops in the irrigation district and supply the sugar factories and canning industries of the area. Cropping practices in this district provide for conservation of moisture and control of soil drifting.

HISTORY: Lethbridge was first called "Ashsoysem," the Blackfeet Indian name for Steep Banks. After a coal mine was opened in the district in 1872, the name Coal Banks was used. When the first section of the townsite was staked out in May, 1885 ,the town was named Lethbridge in honor of William Lethbridge, first president of the North West Coal and Navigation Company which was developing coal properties in the area.

In 1881 the Canadian Pacific Railway line was laid to Dunmore ,109 miles from Lethbridge, and in 1885 the North West Coal Company built a trunk line from Lethbridge to Dunmore for the transportation of their coal.

The first settlers were coal miners, hired by Elliott Galt, general manager of the North West Coal Company. When settlers arrived to take up farms, plans were laid to bring the benefits of irrigation to the district. Irrigation began in 1898 and by the turn of the century irrigation water was spreading over the farm lands of the Magrath, Raymond and Stirling districts.

Religion was established in Lethbridge in 1880 with the arrival of Roman Catholic and Protesand missionaries. The first school was opened in 1886. In 1891, Sir Alexander Galt built the Galt Hospital, originally for the employees of Galt concerns. It was later turned over to the municipality.

Lethbridge was established as a town in 1891 and incorporated as a city on May 9, 1906. In 1914 the city adopted the commission form of government and in 1928 changed to the managerial form of government.

LIVING CONDITIONS: Lethbridge provides ideal living conditions with its plentiful sunshine, chinook winds and mild winters. The city itself boasts wide streets, a cleanliness and neatness of appearance, and modern, well designed buildings. Modern buses provide efficient city transportation.

There are ample supplies of coal and natural gas available for cooking, heating and industrial purposes, and electric power is supplied by the Municipal Power Plant. Building in the city is controlled by a zoning by-law and an active Town Planning Commission.

Recreation in Lethbridge is unlimited. A modern, well-equipped sports centre, swimming pools, children's parks, ball parks, golf courses, a soccer field, and the new Civic Artificial Ice Centre are just a few of the recreation spots in the city.

Nearby Henderson Lake is an oasis for recreation during the summer months, and Waterton Lakes-Glacier International Peace Park is within easy driving distance . Vacationers flock to the park in the summer for boating, swimming, fishing and hiking, and in the winter there is magnificent skiing in the scenic grandeur of the Canadian Rockies.

POPULATION: 22,947 (1951).

ADMINISTRATION: The city council is composed of seven councillors, each elected for two years. At the first meeting each year, the council elects one councillor as Mayor. A city manager is appointed by the council. He is responsible for the finances of the city and all public services.

FIRE PROTECTION: The fire department is under the supervision of the city manager. There are 34 men in the department, including the chief. Two fire stations are well-equipped with modern equipment and all personnel are well trained.

TAX STRUCTURE: 1952 mill rate is 55 mills made up of general municipal levy of 23.7 mills and school levy of 31.3 mills.

LAW ENFORCEMENT: The Lethbridge City Police Department is supervised by the city manager. Police headquarters, police court and cell block are in one central location. There are two prowler cars on 24-hour service, equipped with two-way radios, and one constable employed as traffic officer with motorcycle.

AREAS: The city has an area of 6,400 acres, of which public parks and playgrounds occupy 350.

SEWERS AND WATER MAINS: 48 miles of sanitary sewers and 18 miles of storm sewers. 72 miles of water mains.

ELECTRIC LIGHT AND POWER: The city-owned steam-electric plant on the east bank of the Oldman River supplies three phase, 60 cycle power. Light rates are four cents per kilowatt hour for the first 200 kilowatt hours, 2½ cents per kilowatt hour for the next 800 kilowatt hours and two cents per kilowatt hour for all over 1000 kilowatt hours.

WATER: The water system is owned and operated by the City of Lethbridge. Water is obtained from the Oldman River. It is pumped through a sedimentation basin, filters and chlorinators. Standpipes, a reservoir and a water tower store 1,400,000 gallons of water. Rates are set on a metered basis.

NATURAL GAS: Natural gas is supplied as a public utility by the Canadian Western Natural Gas Company Limited, from Turner Valley, Foremost and Bow Island fields. The gas has a gross heating value of 1,158 B.T.U.'s per cubic foot. The company serves 5,173 domestic customers and 693 commercial and industrial consumers.

NATURAL RESOURCES: Lethbridge's local resources include sub-bituminous coal, clay for bricks and tile, sand and gravel. Agricultural resources are varied. There are cereals, straw, sugar beets, field crops, cattle, sheep, hogs and poultry products ,honey and furs produced in the district.

HEALTH SERVICES: Lethbridge has two general hospitals, Galt and St. Michael's, and one Isolation Hospital. Galt Hospital is operated by the City Hospital Board and has 108 beds and 18 bassinettes. St. Michael's, operated by the Sisters of St. Martha, can accommodate 185 persons and 38 babies. The Isolation Hospital, operated by the Board of Health, has 16 beds. In addition, Lethbridge has the Nursing Mission and Welfare Centre, which nurses and assists underprivileged children.

The Federal Health Department has established a marketing service which checks the sanitary conditions of canning plants, and the Veterinary Research Laboratory.

TRANSPORTATION: Lethbridge is serviced by the Canadian Pacific Railway, Greyhound Bus Lines, Lethbridge Northern Bus Lines, and Paul's Bus Line. Trans-Canada and Western Air Lines provide air service via the city-owned Kenyon Field, 2½ miles south of the city limits. The airport, which covers 875 acres, has three asphalt runways, seven hangars and instrument landing system, is a customs port of entry.

EDUCATION: There are seven elementary schools, one junior high school and one senior high school in Lethbridge. An additional junior high school will open in September, 1953. There are 112 teachers and 3,250 students. There are also three separate schools and two business colleges.

INDUSTRIAL DEVELOPMENT: Lethbridge offers almost unlimited scope for industrial development. The city was founded on coal, and the estimated coal reserves in the district are 700,000,000 tons. There is, besides this abundance of coal, plenty of power and natural gas. The established industries and the resources of the district offer any number of secondary products and industries to be developed. Excellent industrial sites on or near rail and highway transportation are available.

FURTHER INFORMATION

More details on Lethbridge can be obtained from:

S. R. Lamb,
Industrial Representative,
Lethbridge,

or

Director of Industrial Development,
Department of Economic Affairs,
Legislative Building,
Edmonton.